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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KRECK, JOHN J	

ART UNIT	PAPER NUMBER
3673	

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/029,333	MABERRY ET AL.	
	Examiner	Art Unit	
	John Kreck	3673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,14-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment dated 11/8/04 has been entered.

2. Claims 1-12,14-20 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-9, 11, 14-15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrast, et al. (U.S. Patent number 3,926,257) in view of Arfaei, et al. (U.S. Patent number 5,348,583).

Marrast teaches the method for reducing migration (see, e.g. paragraph 3) during cementing a borehole including the steps of forming a slurry of hydraulic cement in water (Marrast fails to teach the density between 0.9 and 3 g/cm^3; however this is an inherent property of well cement slurry); placing the slurry in the borehole adjacent the formation and permitting the slurry to set in the borehole; wherein the slurry is comprised of water, hydraulic cement, and a set accelerating admixture (see col. 1, line67- col. 2, line 2) wherein the slurry is not foamed (see col. 4, lines 20-25). Marrast fails to teach the temperature of the formation and the composition of the accelerating admixture. As noted by applicant, well cementing is frequently performed at low

temperatures (e.g. 4°C to 20°C) in the range of 40° to 100°F; for example, in deep sea wells, or in near-arctic regions.

Arfaei teaches a cement set-accelerating admixture which comprises an alkali or alkaline earth metal nitrate and an alkali or alkaline earth metal nitrite ($Ca(NO_3)_2$ and $Ca(NO_2)_2$ see table 3). Arfaei teaches that the admixture is advantageous because it reduces corrosion (col. 1, lines 53-60). Arfaei also teaches that the admixture is useful at low temperatures. It is apparent that increased gel strength and reduced gel time would be an inherent result of using a set-accelerating admixture.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the method of Marrast in a well having a formation temperature of between 40° and 100°F, and to have used a set-accelerating admixture which comprises an alkali or alkaline earth metal nitrate and an alkali or alkaline earth metal nitrite; and also therefore to have reduced gel time and increased gel strength, as called for in claim 1, in order to cement a deep water or arctic well and to prevent the corrosion which occurs with chloride accelerators.

With regards to claim 2; Arfaei teaches that calcium nitrate and calcium nitrite in a ratio of from 1:3 to about 3:1 (table 3) is effective for set accelerating; thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with calcium nitrate and calcium nitrite in a ratio of from 1:3 to about 3:1.

With regards to claim 3; Arfaei teaches that calcium nitrate and calcium nitrite in a ratio of about 1:1 (table 3) is effective for set accelerating; thus it would have been

further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with calcium nitrate and calcium nitrite in a ratio of about 1:1.

With regards to claim 4; Arfaei teaches that glycols combined with the salts are effective for set accelerating(table 3); thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with glycols.

With regards to claim 5; Arfaei teaches that C2-C6 aliphatic di- or tri-hydric glycols are effective for set accelerating(table 3); thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with C2-C6 aliphatic di- or tri-hydric glycols.

With regards to claim 6; Arfaei teaches that diethylene glycol is effective for set accelerating(table 3); thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with diethylene glycol.

With regards to claim 7; Arfaei teaches that alkanolamine is effective for set accelerating(table 3); thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with alkanolamine.

With regards to claims 8 and 9; Arfaei teaches that methyl diethanolamine is effective for set accelerating(table 3); thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method

with methyl diethanolamine--- (methyl diethanolamine meets the molecular limitations of claim 8).

With regards to claim 11 see col. 3, lines 56-69; 0.05% to 4% s/s corresponds to about 0.5 g to about 40 g per kg of cement, which entirely encompasses the range claimed by applicant; it would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with the set accelerating admixuture added in an amount which provides a total salt between about 3 to about 20 g/kg. *In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists.* In re Wertheim, 541 F.2d 257, 191USPQ 90 (CCPA 1976).

With regards to claim independent 14:

Marrast teaches the method for reducing migration (see, e.g. paragraph 3) during cementing a borehole including the steps of forming a slurry of hydraulic cement in water (Marrast fails to teach the density between 0.9 and 3 g/cm^3; however this is an inherent property of well cement slurry); placing the slurry in the borehole adjacent the formation and permitting the slurry to set in the borehole; wherein the slurry is comprised of water, hydraulic cement, and a set accelerating admixture (see col. 1, line67- col. 2, line 2) wherein the slurry is not foamed (see col. 4, lines 20-25). Marrast fails to teach the temperature of the formation and the composition of the accelerating admixture. As noted by applicant, well cementing is frequently performed at low

temperatures (e.g. 4°C to 20°C) in the range of 40° to 100°F; for example, in deep sea wells, or in near-arctic regions.

Arfaei teaches a cement set-accelerating admixture which comprises an alkali or alkaline earth metal nitrate and an alkali or alkaline earth metal nitrite ($Ca(NO_3)_2$ and $Ca(NO_2)_2$ see table 3). Arfaei teaches that the admixture is advantageous because it reduces corrosion (col. 1, lines 53-60). Arfaei also teaches that the admixture is useful at low temperatures. It is apparent that increased gel strength and reduced gel time would be an inherent result of using a set-accelerating admixture.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the method of Marrast in a well having a formation temperature of between 40° and 100°F, and to have used a set-accelerating admixture which comprises an alkali or alkaline earth metal nitrate and an alkali or alkaline earth metal nitrite; and also therefore to have reduced gel time and increased gel strength, in order to cement a deep water or arctic well and to prevent the corrosion which occurs with chloride accelerators.

Arfaei teaches that naphthalene sulfonate (a dispersant) is effective for in the set accelerating mixture(table 3); thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with a dispersant as called for in claim 14.

With regards to claim 15; wells having a temperature in the range of 40°F to 70°F are frequently cemented; for example in deep water wells or in near-arctic regions. It would have been further obvious to one of ordinary skill in the art at the time of the

invention to have practiced the Marrast method in a deep water wells or in near-arctic well having a temperature in the range of 40° to 70°, in order to obtain oil from a deep water or near arctic oil field.

With regards to claim 18; Arafei teaches the dispersant, but is silent regarding a fluid loss agent. Official Notice is taken of the fact that it is well known to use fluid loss control agents in processes of well cementing, in order to prevent fluid loss from the cement slurry. It would have been further obvious to one of ordinary skill in the art at the time of the invention to have further modified the Marrast process to have included a fluid loss control agent as called for in claim 18, in order to prevent fluid loss from the cement slurry.

2. Claims 1-10, 13, and 14-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrast in view of the prior sale of "PolarSet®" (as documented in "CEITEC Evaluation Plan for Low-Temperature Concrete Admixtures")

Marrast teaches the method of cementing a borehole including the steps of forming a slurry of hydraulic cement in water (Marrast fails to teach the density between 0.9 and 3 g/cm^3; however this is an inherent property of well cement slurry); placing the slurry in the borehole adjacent the formation and permitting the slurry to set in the borehole; wherein the slurry is comprised of water, hydraulic cement, and a set accelerating admixture (see col. 1, line67- col. 2, line 2). Marrast fails to teach the temperature of the formation and the composition of the set-accelerating admixture. As noted by applicant, well cementing is frequently performed at low temperatures (e.g.

4°C to 20°C) in the range of 40° to 100°F; for example, in deep sea wells, or in near-arctic regions.

The set-accelerating admixture PolarSet® has been on sale for more than one year prior to the filing of the instant application (see the CEITEC document, page 7, paragraph 4). It is noted that applicant's disclosure indicates that PolarSet® is the set-accelerator used in the invention (as shown in paragraph 34, and table 1). It is apparent that PolarSet® is an effective set-accelerator.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method in a well having a formation temperature of between 40° and 100°F, and to have used PolarSet® as the set accelerator; thus meeting the limitations of claims 1-10, and 13, since PolarSet® is an effective set-accelerator.

Regarding independent claim 14:

Marrast teaches the method of cementing a borehole including the steps of forming a slurry of hydraulic cement in water (Marrast fails to teach the density between 0.9 and 3 g/cm^3; however this is an inherent property of well cement slurry); placing the slurry in the borehole adjacent the formation and permitting the slurry to set in the borehole; wherein the slurry is comprised of water, hydraulic cement, and a set accelerating admixture (see col. 1, line67- col. 2, line 2). Marrast fails to teach the temperature of the formation and the composition of the set-accelerating admixture. Marrast also fails to explicitly teach the additive. As noted by applicant, well cementing

is frequently performed at low temperatures (e.g. 4°C to 20°C) in the range of 40° to 100°F; for example, in deep sea wells, or in near-arctic regions.

Official Notice is taken of the fact that it is well known to use fluid loss control agents in processes of well cementing, in order to prevent fluid loss from the cement slurry.

The set-accelerating admixture PolarSet® has been on sale for more than one year prior to the filing of the instant application (see the CEITEC document, page 7, paragraph 4). It is noted that applicant's disclosure indicates that PolarSet® is the set-accelerator used in the invention (as shown in paragraph 34, and table 1). It is apparent that PolarSet® is an effective set-accelerator.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method in a well having a formation temperature of between 40° and 100°F, and to have used PolarSet® as the set accelerator, and further to have used a fluid loss control agent; thus meeting the limitations of claim 14, since PolarSet® is an effective set-accelerator, and fluid loss control agents prevent loss of fluid from the slurry.

With regards to claim 15; wells having a temperature in the range of 40°F to 70°F are frequently cemented; for example in deep water wells or in near-arctic regions. It would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method in a deep water wells or in near-arctic well having a temperature in the range of 40° to 70°, in order to obtain oil from a deep water or near arctic oil field.

With regards to claim 16; Polar-Set® meets those limitations.

3. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrast in view of the prior sale of "PolarSet®" as applied to claims 1 and 10 above, and further in view of "PolarSet® Product Information".

The Marrast patent, as modified in view of the prior sale of PolarSet® teaches all of the limitations of claims 1 and 10; but fails to teach the amount of salt or admixture in proportion to the total amount of cement.

The "PolarSet® Product Information" document teaches that the amount of PolarSet® is design dependent; but gives ranges of 520 to 3910 mL/100kg and a maximum of 6520 mL/100kg. These volumes correspond to approximately 2.5; 19, and 32 g/kg; and to approximately 5.2, 39.1, and 65.2 cm^3 per kg. These values completely encompass the values claimed by applicant.

It would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with PolarSet® in an amount which provides 3-20 g/kg as called for in claim 11; or about 4-45cm^3 per kg as called for in claim 12; since the PolarSet® document teaches that these amount are effective for accelerating the setting. *In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists.* In re Wertheim, 541 F.2d 257, 191USPQ 90 (CCPA 1976).

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrast in view of the prior sale of "PolarSet®" as applied to claim 16 above, and further in view of "PolarSet® Product Information".

The Marrast patent, as modified in view of the prior sale of PolarSet® teaches all of the limitations; but fails to teach the amount of salt or admixture in proportion to the total amount of cement.

The "PolarSet® Product Information" document teaches that the amount of PolarSet® is design dependent; but gives ranges of 520 to 3910 mL/100kg and a maximum of 6520 mL/100kg. These volumes correspond to approximately 2.5; 19, and 32 g/kg; and to approximately 5.2, 39.1, and 65.2 cm^3 per kg. These values completely encompass the values claimed by applicant.

It would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Marrast method with PolarSet® in an amount which provides about 4-45cm^3 per kg as called for in claim 17; since the PolarSet® document teaches that these amount are effective for accelerating the setting. *In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists.* In re Wertheim, 541 F.2d 257, 191USPQ 90 (CCPA 1976).

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrast in view of Arfaei as applied to claim 14 above, and further in view of WO 00/29351 (as cited by applicant---see US equivalent 6,656,265). Marrast and Arfaei fail to teach the sized particulate. The WO document teaches that sized particulate is useful to prepare

a low density cement, useful in sandy areas, for example. It would have been further obvious to one of ordinary skill in the art at the time of the invention to have further modified the Marrast process to have included sized particulate as called for in claim 19, to work in a sandy area, for example.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/29351 (as cited by applicant---see US equivalent 6,656,265) in view of the prior sale of "PolarSet®" (as documented in "CEITEC Evaluation Plan for Low-Temperature Concrete Admixtures")

The WO document teaches the method of cementing a borehole including the steps of forming a slurry of hydraulic cement in water; placing the slurry in the borehole adjacent the formation and permitting the slurry to set in the borehole; wherein the slurry is comprised of water, hydraulic cement, and a set accelerating admixture (see col. 3, line 9). The WO document teaches calcium chloride as the accelerating agent.

The set-accelerating admixture PolarSet® has been on sale for more than one year prior to the filing of the instant application (see the CEITEC document, page 7, paragraph 4). It is noted that applicant's disclosure indicates that PolarSet® is the set-accelerator used in the invention (as shown in paragraph 34, and table 1). PolarSet® is disclosed to be advantageous over calcium chloride, since it does not corrode steel.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modifed the WO method to have used PolarSet® as the set accelerator; as called for in claim 20, since PolarSet® does not corrode steel.

Response to Arguments

7. Applicant's arguments filed 3/29/04 have been fully considered but they are not persuasive.

Applicant has argued that Marrast teaches foamed cement. It is apparent that Marrast discloses that the cement may foam after being placed in the well(see col. 4, lines 20-25); but it is deemed to anticipate "slurry is not foamed", since the document clearly contemplates situations where no foam is formed.

With regards to claim 14; applicant's argument that the sulfonate (allegedly disclosed for use as acclerator) is not a dispersant are not persuasive. The '583 patent clearly teaches the use of the sulfonate as a part of the composition and applicant has identified the sulfonate as a dispersant in the specification.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Kreck whose telephone number is (703)308-2725. The examiner can normally be reached on M-F 5:30 am - 2:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Shackelford can be reached on (703)308-2978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JOHN KRECK
PRIMARY EXAMINER

John Kreck
Examiner
Art Unit 3673

JJK